ANDREA PETRI

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EDUCATION

Columbia University, Graduate School of Arts and Sciences *August 2011 - present*
PhD. Physics *expected 2017*
M.A. Physics *June 2013*
Relevant coursework:
Advanced Programming Statistical Mechanics Quantum Mechanics
Physical Cosmology Classical Fields and Waves Quantum Field Theory

Scuola Normale Superiore, Pisa, Italy *July 2011*
B.A. in Physics

EXPERIENCE

Morgan Stanley - Institutional Equity Division June 2015 - August 2015
Electronic Market Making desk *New York*

· Analyzed stock market historical data, with particular focus on US equity market trades from 2009 to 2014
· Developed mathematical models and algorithms for intra–day volume forecasts

Project experience Fall 2013 - Present
Software engineering *Columbia University, NY*

· Started the development of the LensTools Python library, that will prove useful in Weak Gravitational Lensing data analyses, with particular focus on ray-tracing simulations, astrophysical image analysis, data reduction and statistical inferences of model parameters from measured data (project URL `http://lenstools.rtfd.org`)
· Implemented from scratch the client and server side components of a three tier simple database service, using the C language socket API (code repository available on request)

Research Summer 2012 - Present
Astrophysics – Large Scale Structure of the Universe *Columbia University, NY*

· Worked on Cosmic Microwawe Background (CMB) data analysis, with particular focus on temperature image reconstruction starting from raw time ordered data (bolometric and pointing)
· Contributed to the development of CMB map-making software, implemented the corrections for pointing and calibration offsets
· Handled several supercomputing tasks, including planning and production of a 30TB simulated dataset featuring Cosmological N-body systems
· Conducted statistical analysis of Cosmological Large Scale Structure simulated images, with particular emphasis on the development and implementation of new techniques to constrain physical model parameters
· Developed scientific computing software packages in Python
· Served as peer reviewer for the journal Monthly Notices of the Royal Astronomical Society

Teaching Fall 2012 - Present
Graduate student instructor *Columbia University, NY*

· Taught several Physics Laboratory introductory courses aimed at pre-medical and engineering track students
· Designed and taught as co-instructor a Modern Cosmology class aimed at high school students in the Columbia Science Honors Program (SHP)

TECHNICAL STRENGTHS

Mathematical tools	Linear algebra, bayesian statistics, image processing
Programming Languages	Python, C/C++, Fortran90, Bash, R
Protocols & APIs	Object Oriented Programming, Parallel Computing (MPI), TCP/IP sockets, HTTP
Databases	MySQL
Tools	Distributed source control (git, mercurial)